

WESTERN EUROPEAN CUSTOMER SERVICES
MARKET ANALYSIS AND FORECAST

1989 - 1994

INPUT

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WESTERN EUROPEAN CUSTOMER SERVICES MARKET ANALYSIS AND FORECAST

1989-1994

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**Customer Service Programme in Europe
(CSPE)**

***Western European Customer Services Market
Analysis and Forecast, 1989-1994***

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Abstract

This report contains an analysis of user expenditure for customer services in Western Europe and provides a five-year forecast for user expenditures on customer services over the period 1989 to 1994.

The report provides estimates of user expenditure for customer services in thirteen Western European country markets, together with growth forecasts for the period 1989 to 1994. Country markets included are:

Austria	Netherlands
Belgium	Norway
Denmark	Spain
France	Sweden
Finland	Switzerland
West Germany	United Kingdom
Italy	

The report also identifies market characteristics and discusses factors influencing growth.

INPUT estimates for the customer services revenues of the leading fifteen equipment vendors in 1988 are provided, segmented by service sector and country market.



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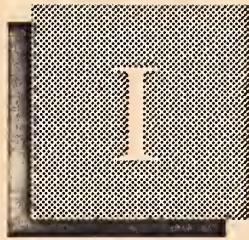
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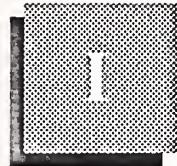
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Introduction



Introduction

This report is produced by INPUT as part of its 1989 Customer Service Programme in Western Europe.

A

Objectives and Scope

The objectives of this report are to provide an analysis of user expenditure for customer services in Western Europe, and to provide an estimate of the market size and a five-year growth forecast for the period 1989 to 1994.

Further objectives are to:

- Assess the size of the individual country markets for customer services and a five-year growth forecast for each, for the period 1989 to 1994.
- Provide forecasts for three vendor type segments and the four service sectors of the customer services market in Western Europe.
- Estimate the customer services revenues of the leading equipment vendors, segmented by service sector and country market.

B

Methodology

INPUT approached the leading equipment vendors for details and confirmation of company customer services revenues. A high proportion of vendors cooperated in providing data to INPUT.

Research to provide additional data contained within this report was conducted using the following sources of information:

- Vendor annual reports
- Company press releases
- Specialized data published by the computer market trade press

C

Definitions

Service sectors are defined by INPUT as follows:

- Hardware maintenance: the repair or routine preventive maintenance of computer systems hardware or hardware components. Included are associated support activities such as telephone support, problem analysis and remote diagnostics.
- Software service/support: software maintenance activities that relate to system software (not application software). Included are associated support activities such as telephone support, problem analysis and software diagnostics. Exhibit III-2 provides a schematic illustration of INPUT's definition.
- Professional services: within the definition of customer services, this sector of the market refers to those elements of professional services that are delivered and revenued exclusively as a customer services activity. Examples of customer service professional services are as follows:
 - Cabling
 - Consultancy
 - Network Planning
 - Network Management
 - Systems Software Evaluation
 - Facilities Management
 - Problem Management
 - Configuration Planning
 - Environmental Planning
 - Installation
- Education and training: within the definition of customer services, this sector of the market refers to those elements of education and training that are delivered and taken as revenue by a customer services organization. Education and training activities are defined as those related to computer hardware or operating systems software (not applications). These aspects of customer service would normally include:
 - User hardware maintenance training, housekeeping and support training
 - User operating systems software maintenance training, housekeeping and support training
 - Operator training related to the use of hardware or operating systems software

Vendor types are defined by INPUT in the following categories:

- Equipment vendors are defined as companies that manufacture computer hardware equipment and may service equipment manufactured by themselves or other equipment manufacturers.

- Third-party maintenance vendors are defined as companies that service computer equipment independent of the manufacturer or agent who sold the equipment.
- Dealers and distributors are defined as vendors that service equipment that is sold by them, either as an agent of the equipment vendor or as a value-added reseller (VAR).

D**Economic Statistics**

Exhibit I-1 provides a list of the U.S. dollar exchange rates and the inflation assumptions used in this report.

EXHIBIT I-1**Comparative Economic Statistics**

Country	Currency	U.S. Dollar Exchange Rate	1989 Inflation Assumptions (Percent)
Austria	Sch	13.6	+2.8
Belgium	BF	40.5	+3.0
Denmark	DK	7.53	+4.8
France	FF	6.55	+3.5
Finland	Fm	4.32	+6.0
West Germany	Dm	1.93	+3.0
Italy	Lira	1409.0	+6.5
Netherlands	Dfl	2.18	+1.1
Norway	NK	7.00	+4.5
Spain	PTA	121.0	+6.3
Sweden	SK	6.55	+7.0
Switzerland	SF	1.70	+3.0
United Kingdom	£	0.61	+7.7

Source of Data: Exchange Rates - IMF (Average exchange rates for second quarter 1989)

Inflation - Barclays Bank (August 1989)

Conversion to U.S. dollars is used for consolidation and comparative purposes.

The forecasts, in keeping with INPUT's standard practice, are expressed in current (1989) currencies and therefore include an allowance for inflation.

E

Report Structure

The remaining chapters of this report are structured as follows:

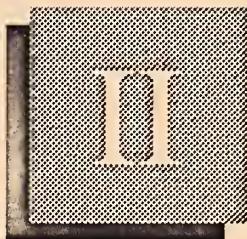
Chapter II is an executive overview which provides a summary of the complete report.

Chapter III provides a definition of the customer services market and its structure, and analyses the 1988 customer services market.

Chapter IV contains INPUT's forecast for the growth of the customer services market over the five-year period 1989 to 1994, together with a discussion of the factors influencing growth.

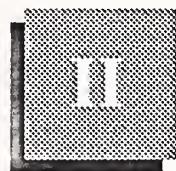
Appendix A contains INPUT's estimates of user expenditure for customer services in thirteen individual country markets in Western Europe.

Appendix B provides INPUT's estimates of the 1988 customer services revenues of the leading fifteen equipment vendors in Western Europe.



Executive Overview

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Executive Overview

A

Key Market Characteristics

The key characteristics of the customer service market are listed in Exhibit II-1.

EXHIBIT II-1

Key Market Characteristics

- Hardware maintenance growth slowing
- Software bundling restricting growth
- Opportunities in nonhardware service
- Independent vendor growth higher
- Market domination by
 - Hardware maintenance
 - Major country markets
 - Leading equipment vendors

These characteristics can be summarized as follows:

- Growth in the hardware maintenance market is slowing. Over the five-year forecast period 1989-1994, INPUT forecasts that market growth of the hardware maintenance sector will achieve a 4% compound annual growth rate (CAGR).
- The activities of vendors who bundle software support pricing with the software license fee are impacting both the size and growth of the

software support sector of the customer services market. INPUT estimates that bundling of software support has reduced the size of the software support sector by around 35% in the last three years.

- Major opportunities for vendors to recover losses due to stagnation of hardware maintenance growth are located in the area of nonhardware maintenance-related service. There is growth opportunity in the areas of software support, professional service and education and training. By extending the boundaries outside the current restrictions of customer services, vendors can access the much larger markets related to disaster recovery, applications and system operations. Market growth in these areas is forecast at 20% or higher over the period 1989-1994.
- Growth of independent vendor customer service revenues is forecast to be higher than that for equipment vendors. Independent maintenance companies, particularly TPM vendors, operate primarily in the hardware maintenance sector of the customer services market. Forecast growth rates for the period 1989 to 1994 in the TPM segment of the market are 16%, compared with the 4% CAGR forecast for the hardware maintenance sector.
- The customer services market structure indicates a concentrated market pattern at three levels:
 - Hardware maintenance accounts for about 82% of user expenditure for customer service.
 - Major country markets are estimated to account for approximately 70% of user expenditure for customer service.
 - Customer service revenue of the leading five equipment vendors accounts for around 50% of user expenditures for customer service.

B

Primary Growth Factors

The primary factors considered by INPUT to be influencing growth in the customer services market are listed in Exhibit II-2, and can be summarized as follows:

- The reliability of computer hardware is increasing, the implication of which is that equipment will need less service. The result of this implication is a user perception that service should cost less. Equipment vendors indicate that up to 60% of PCs are sold without a formal service contract due to user perception that they are unlikely to fail.
- Complexity of computer systems is increasing, due to users' implementation of complex networks, applications, and multiprocessor hardware configurations. The result of these implementations is that although hardware components are more reliable, systems are perhaps

less so. Therefore the user may not fully realize gains in hardware reliability.

- The software support pricing policies of equipment vendors can have a significant impact on growth in the software support sector of the customer services market. Unbundling software support pricing with, for example, the software license fee, will have the reverse effect.
- Equipment vendor warranty policies can impact growth in the customer services market, primarily in the hardware maintenance sector. The effect of equipment vendors extending warranty periods is to remove a portion of revenue from the market for the duration of the warranty. Warranties in the PC/workstation segment are considered by equipment vendors to be likely to extend towards three years. Warranties in other market segments are considered by vendors unlikely to extend beyond one year.
- Pricing competition can have the effect of reducing growth in the customer services market. The primary forces that are driving service prices (particularly hardware maintenance prices) down is competition from TPM companies and lower overall hardware prices. INPUT's user survey results indicate that around 25% of users are price-sensitive.

EXHIBIT II-2

Customer Services Market Primary Growth Factors

- Hardware reliability
- System complexity
- Software support pricing
- Warranty policy
- Pricing competition

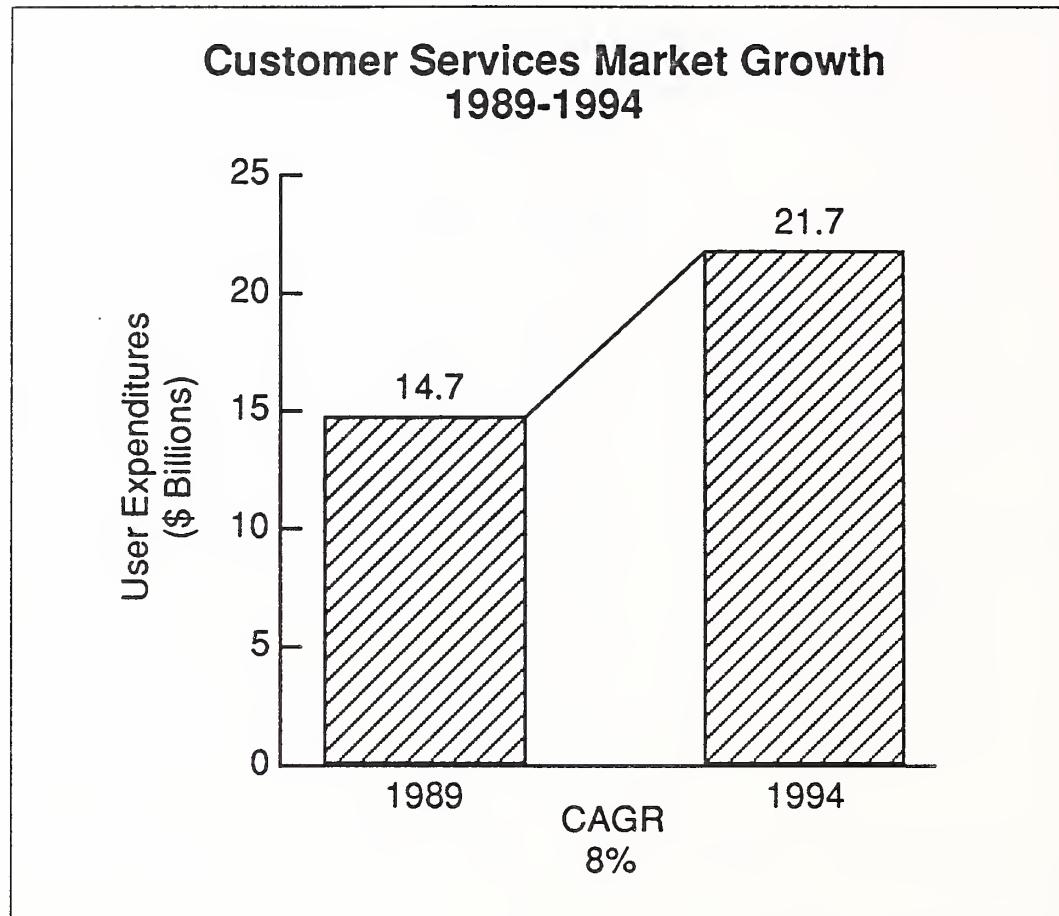
C

**Market Growth—
1989 to 1994**

Exhibit II-3 illustrates INPUT's forecasts for user expenditures on customer services in Western Europe over the five-year period 1989 to 1994.

Taking into account all factors that are influencing growth, INPUT forecasts that user expenditure for customer services in Western Europe will grow at a modest 8% CAGR over the period 1989 to 1994 (including inflation). Other growth factors include:

EXHIBIT II-3



- User single-source service requirements, which influences individual sector growth rather than overall growth
- User need for quality service
- Vendor initiatives in nonhardware maintenance-related services
- Skill shortages
- Proactive service technology

User expenditures for customer service were estimated to total \$13.2 billion in 1989 and reach \$21.7 billion in 1994.

D

Market Segment Growth—1989 to 1994

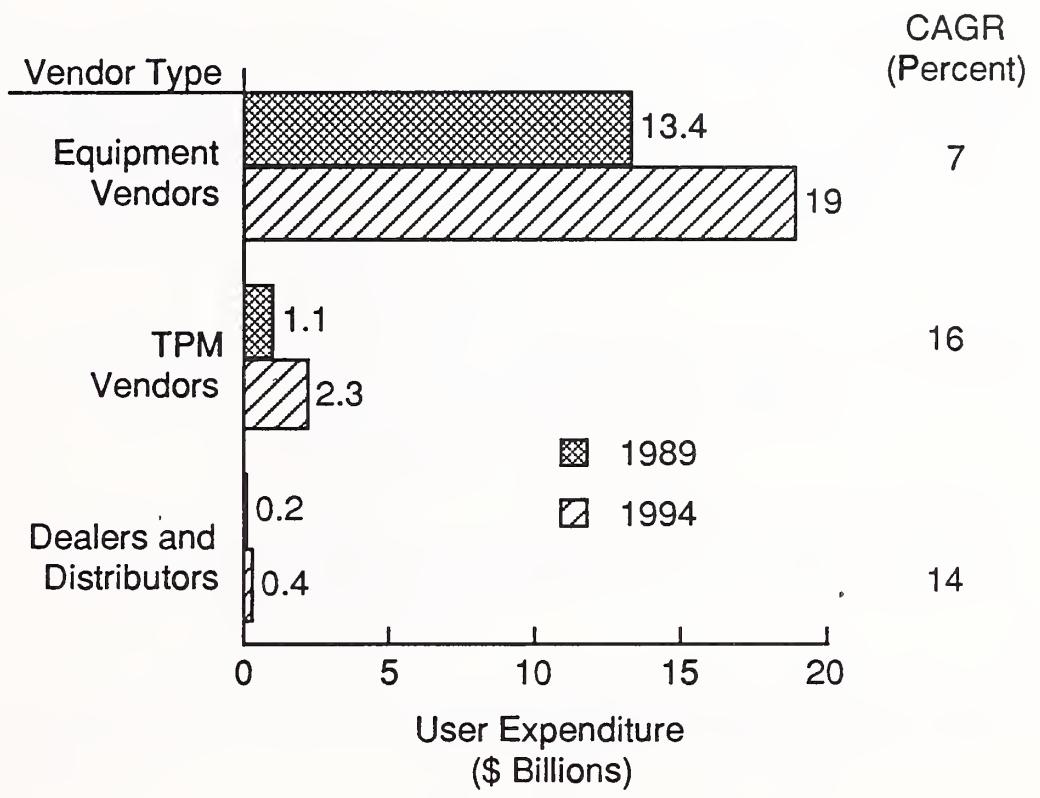
One of the analyses of the market is by vendor type:

- Equipment vendors
- TPM vendors
- Dealers and distributors

Exhibit II-4 provides illustrations of INPUT's forecast of customer service revenue by vendor type.

EXHIBIT II-4

Customer Services Market Growth by Vendor Type 1989-1994



Equipment vendors form the dominant source of customer service revenues, having approximately a 90% share of the total market. The market share of TPM vendors is estimated at around 8% in 1989, increasing to approximately 11% by 1994. Over the same time period, the dealer and distributor market segment will grow from around 1% of the total market to approximately 2% by 1994.

Growth forecasts for each vendor type indicate that the TPM segment will grow at the highest rate—16%—followed by the dealers and distributors and equipment vendors, at 14% and 7% respectively.

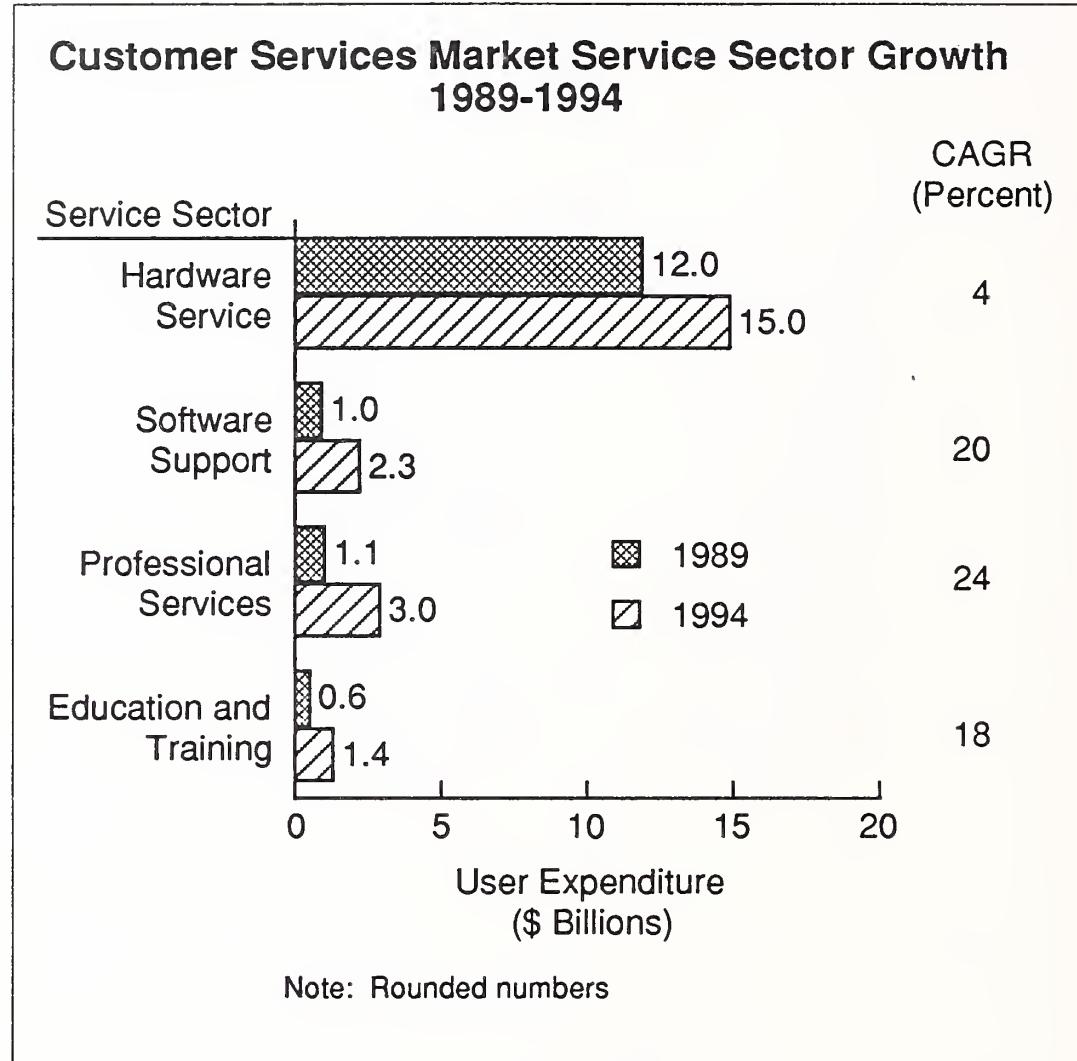
E

Service Sector Growth—1989 to 1994

Exhibit II-5 presents INPUT's forecast for growth of user expenditure in four service sectors of the customer service market:

- Hardware service
- Software support
- Professional service
- Education and training

EXHIBIT II-5



User expenditure for customer service is dominated by that in the hardware service sector. In 1989, user expenditures in this sector of the market were estimated to account for around 82% of the total, and are projected to decrease to approximately 70% by 1994.

The highest growth forecasts are in sectors of the market related to nonhardware maintenance activities.

- Software support was estimated to account for approximately 7% of user expenditure in 1989, increasing to around 11% by 1994 and resulting in a forecast growth rate of 20% over the five-year period 1989 to 1994.
- Professional services were estimated to account for approximately 7% of user expenditure in 1989, increasing to around 14% in 1994 and resulting in a forecast growth rate of 24% over the period 1989 to 1994.

- Education and training was estimated to account for approximately 4% of user expenditure in 1989, increasing to around 7% by 1994 and resulting in a forecast growth rate of 18% over the period 1989 to 1994.

Forecasts for the growth of user expenditure in the software support sector of the market are subject to a degree of uncertainty related to equipment vendor policies on bundled or individual pricing for software support. If vendors decide to unbundle software support pricing, both market size and growth would increase beyond the 20% forecast. If more equipment vendors adopt a policy of bundling software support prices, the inverse would occur.

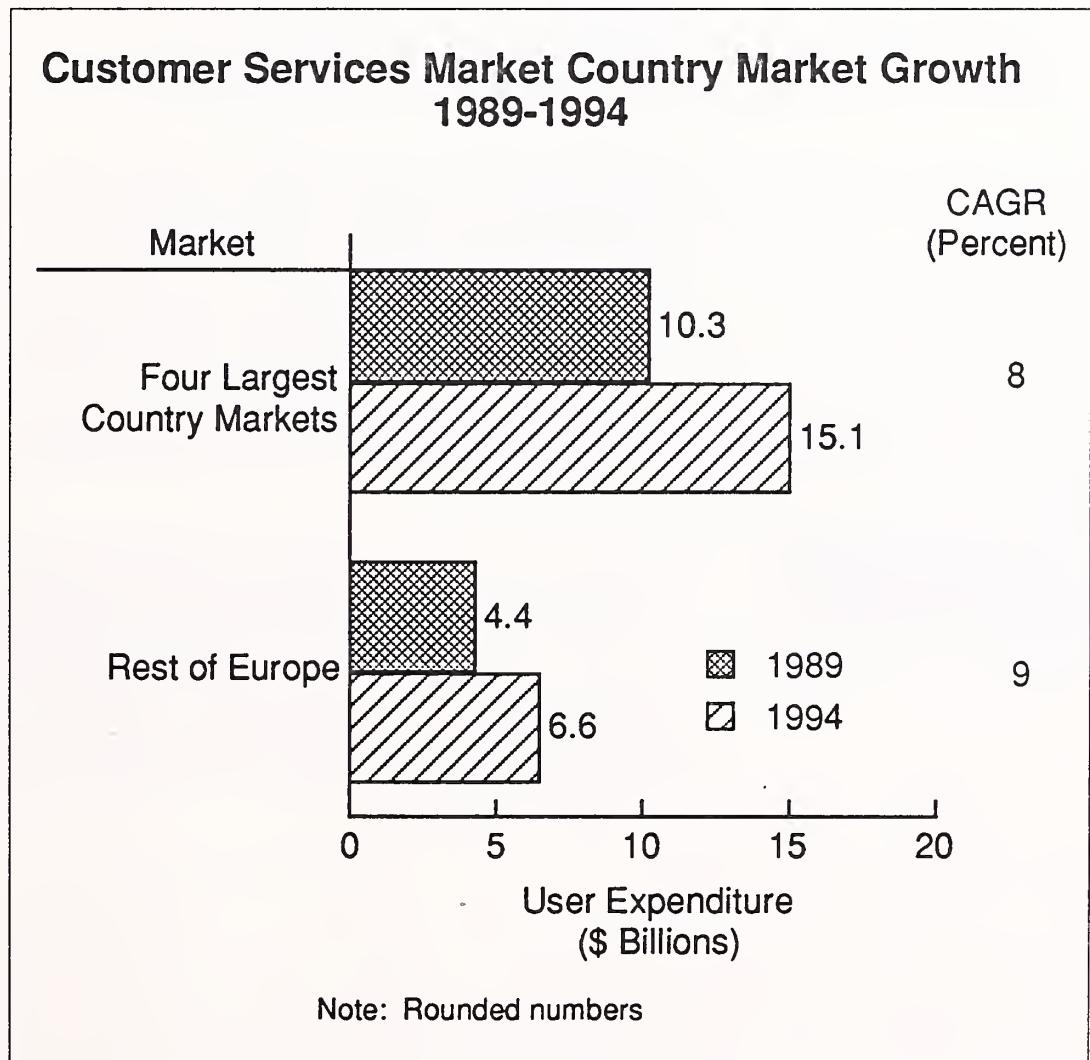
In forecasting growth in the software support service sector, INPUT has taken a balanced view that a modest degree of unbundling will occur due to vendor initiatives in the restructuring of service offerings.

F

Country Market Growth—1989 to 1994

EXHIBIT II-6

Exhibit II-6 shows INPUT's forecast for growth of customer services revenues in the Western European country markets over the five-year period 1989 to 1994.



One characteristic of the customer services market in Western Europe is that user expenditures in the four major country markets account for the major portion of the market. These major country markets are of:

- France
- West Germany
- Italy
- United Kingdom

User expenditures in these four markets account for around 70% of the total in Western Europe.

The other country markets account for the remaining user expenditures for customer services:

- Austria
- Belgium
- Denmark
- Finland
- Netherlands
- Norway
- Spain
- Sweden
- Switzerland

Market growth in eleven of the thirteen country markets analysed is forecast to be relatively consistent, ranging between 6% and 8%. The remaining two country markets, those in Italy and Spain, are considered to be developing at a faster rate in terms of increased installed base of computer systems. As a result of the faster development in those countries, the growth of the customer services market is forecast to be higher. Growth rates of customer services over the five-year period 1989 to 1994 in Italy and Spain are forecast to grow at 13% and 16%, respectively.

G

Leading Equipment Vendor Customer Services Revenues

Exhibit II-7 lists the customer services revenues of the five leading equipment vendors in the Western European customer services market. Exhibit II-7 also contains an estimate of the market share of each of the five leading equipment vendors. The dominant position that these five leading vendors command in Western Europe is indicated by their combined share of the customer services market, which is around 50% based on 1988 revenues.

EXHIBIT II-7

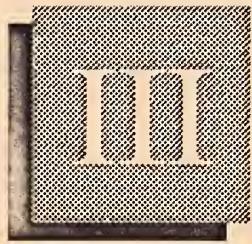
Leading Equipment Vendor Customer Services Revenues

Vendor	Estimated 1988 Customer Services Revenues (\$ Millions)	1988 Market Share (Percent)
IBM	2,850	21
Digital	1,300	10
Olivetti	850	6
Bull	815	6
Siemens	805	6

Western Europe contains a number of indigenous equipment vendors and one characteristic of these vendors is the high percentage of customer services revenues that are obtained in the "home" market by the vendors. Examples are provided by:

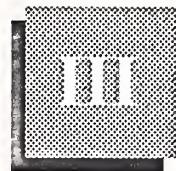
- Groupe Bull, with headquarters in France, generates around 53% of its customer services revenues from the French market.
- ICL, the U.K.-based equipment vendor, gains around 77% of its customer service revenues from the U.K. market.
- Siemens, the West German equipment vendor, gains around 77% of its customer services revenues from the West German market.

The more international European equipment vendors are typified by Nixdorf, which gains a lower proportion of its customer services revenues from its West German home market. INPUT estimates this figure to be around 35%.



The Customer Services Market

—



The Customer Services Market

This section of the report discusses a number of aspects of the customer services market:

- INPUT's definition of the customer services market.
- Estimated user expenditure for customer services in 1988, including how this expenditure can be identified by dividing the market in a number of ways.
- The customer services market environment and characteristics.
- Customer services revenues of the leading equipment vendors.

A

Market Definition

INPUT's definition of the customer services market is illustrated in schematic form in Exhibit III-1. This exhibit also illustrates the structure of the hardware products market and the relationship between customer services and the hardware products market.

Included within INPUT's definition of customer services are four service sectors:

- Hardware maintenance
- Systems software support
- Professional services
- Education and training

Excluded from INPUT's definition of the customer services market are:

- Hardware product sales
- Media and supplies sales
- Sales of spare parts

EXHIBIT III-1

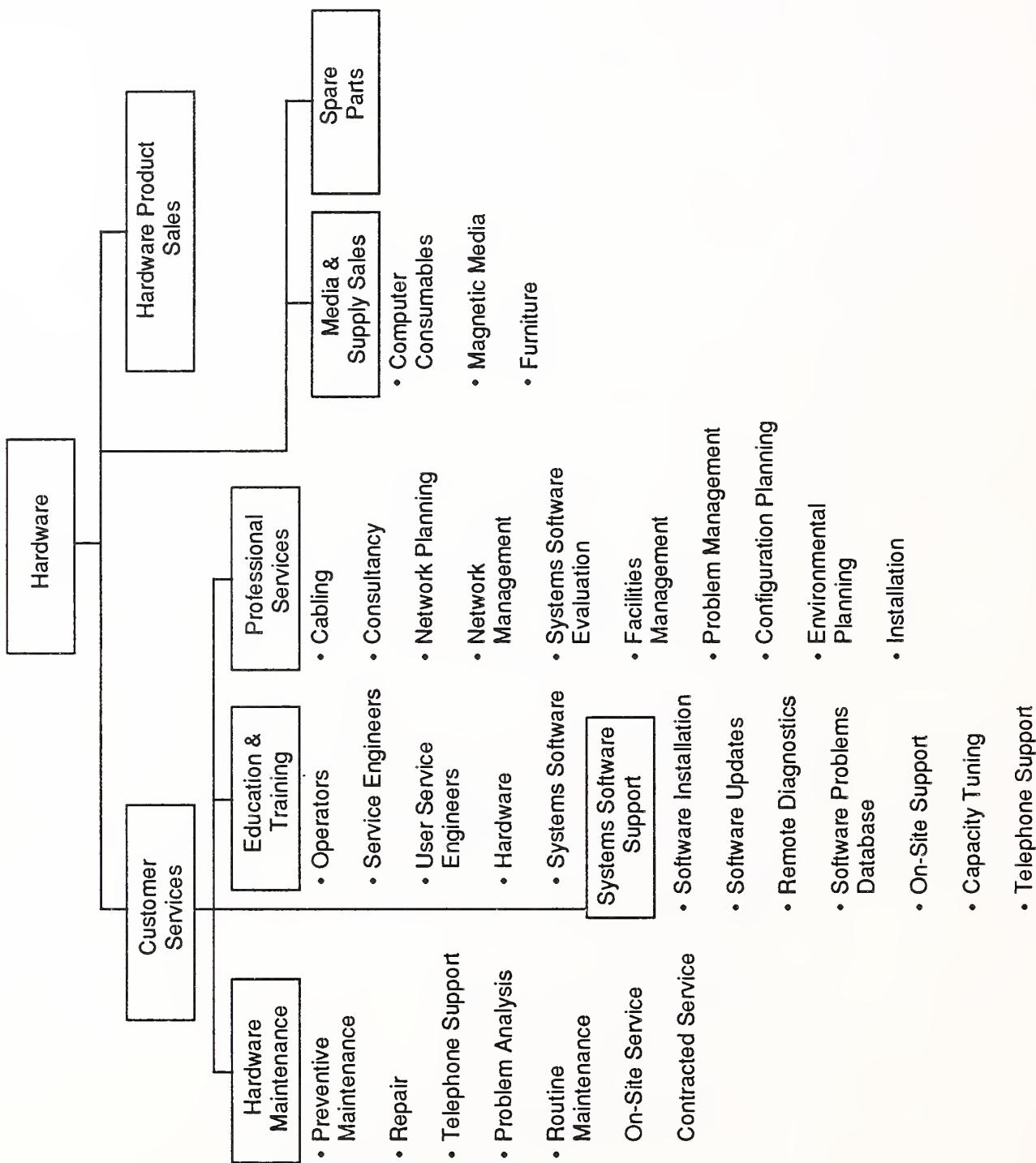
Hardware Products Market Structure

Exhibit III-1 indicates the principal activities undertaken within each of the four service sectors. In each service sector, INPUT's definition of user expenditure includes only those services provided to users by an external organization on a chargeable basis. Services provided by subsidiaries or internal resources are considered unavailable for open tender and are therefore excluded from estimates.

Software support activities that are included in the customer services market are those activities related to support of the systems software. Exhibit III-2 illustrates INPUT's definition of the software products market. Aspects of software support included in the customer services market are restricted to those areas highlighted in Exhibit III-2 relating to system control and data center management.

The areas of professional service and education and training are both parts of more widely defined computer services markets. Only those professional services or education and training services directly associated with the support of hardware operations and operating systems software support are included as part of the customer services market. The principal activities related to these areas are listed in Exhibit III-1.

Distribution of user expenditure for customer services can be categorized in a number of ways. INPUT defines revenue sources under two headings: the first defines three market segments dependent on the type of vendor providing the service; the second is based on four service sectors dependent on the type of activity that generates the revenue.

B

Market Structure

The customer services market can be structured in a number of ways. INPUT defines the market structure in four categories:

- Vendor segments
- Service sectors
- System size
- Country markets

EXHIBIT III-2

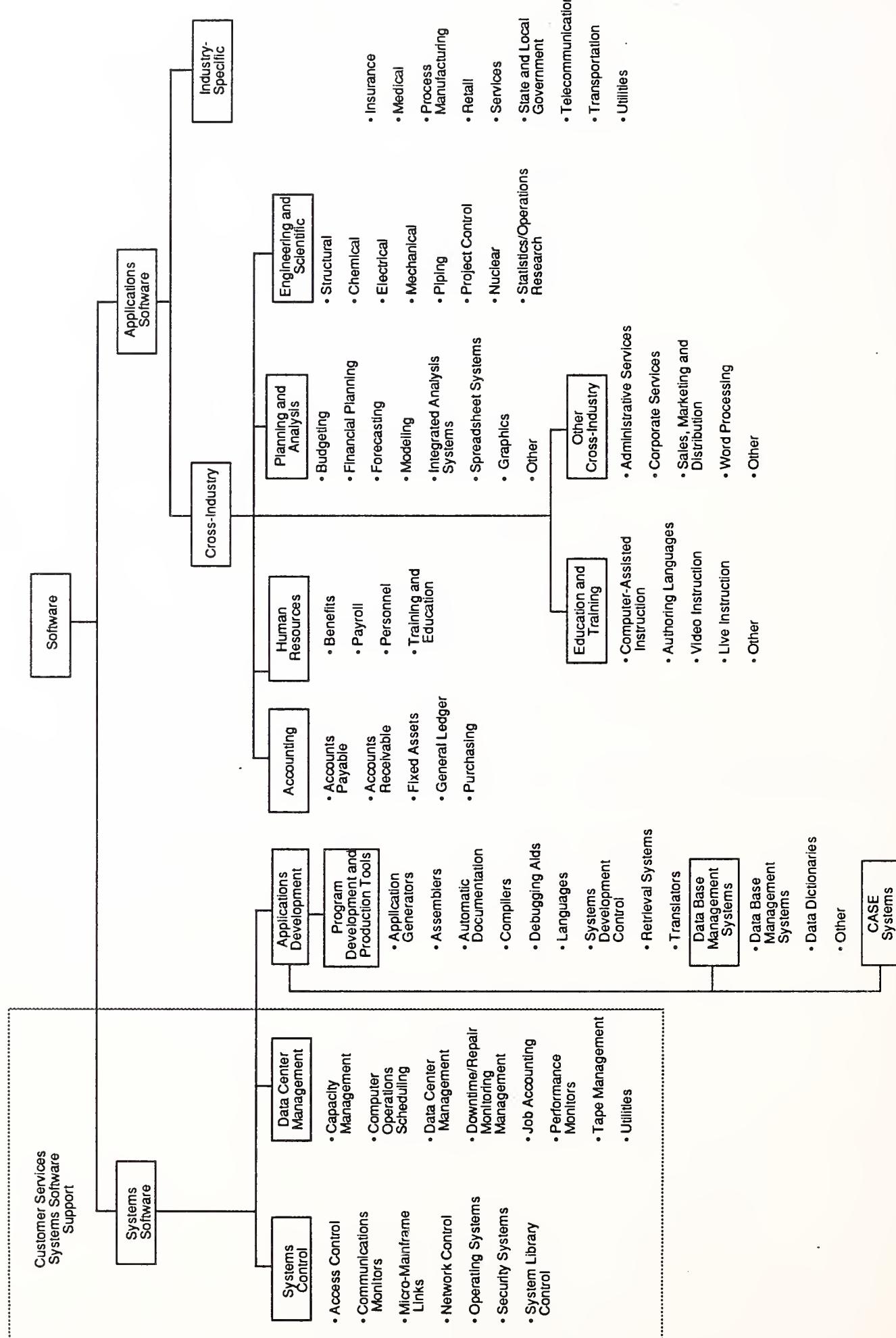


Exhibit III-3 gives details of these four categories of customer service market structure.

EXHIBIT III-3

Customer Services Market Structure

Market Segments (Vendor Type)

- Equipment vendors
- TPM vendors
- Dealers and distributors

Service Sectors (Activity type)

- Hardware service
- Software support
- Professional services
- Education and training

System Sizes

- Mainframe/Large systems
- Medium range systems
- Small systems/workstations/PCs

Country Markets

INPUT estimates that in 1988, the customer services market in Western Europe was valued at close to \$13.5 billion in total user expenditure.

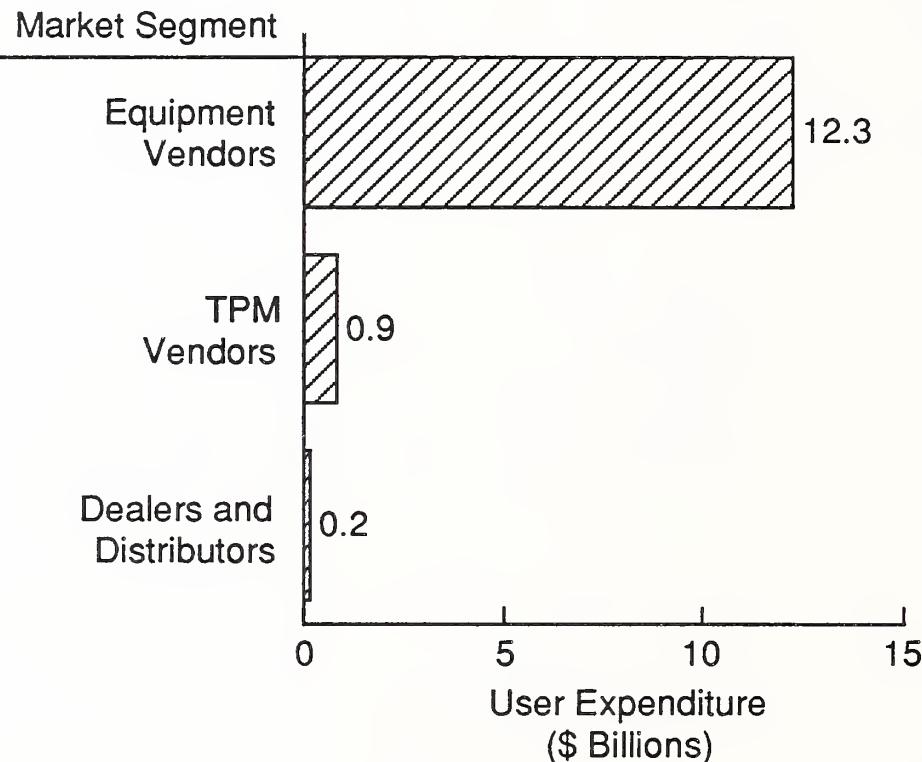
1. 1988 User Expenditure by Market Segment

Exhibit III-4 presents INPUT's estimate for 1988 user expenditure for customer services in three market segments defined by type of vendor:

- Equipment vendors
- TPM vendors
- Dealers and distributors

EXHIBIT III-4

1988 User Expenditure by Market Segment



User expenditure for customer services provided by equipment vendors is the dominant proportion of customer services revenues, accounting for approximately 92% of user expenditure in 1988.

Third-party maintenance (TPM) vendors attracted a lower proportion of user expenditure than did equipment vendors. TPM vendor revenues accounted for approximately 7% of user expenditure for customer services, indicating TPM penetration of the customer services market in 1988, based on INPUT's 1989 forecasts.

The dealers and distributors market share represents around 1.5% of 1988 user expenditure for customer services. This sector of the market is constrained by two factors:

- Dealers and distributors tend to operate mainly in the smaller systems area of the market, particularly the PC and workstation sector. Discussions with equipment vendors indicate a user perception that the reliability of PCs is very high, sufficiently high to reduce the need for formal service contracts. Equipment vendors have quoted figures suggesting that up to 60% of PCs are sold without a formal service contract.

- Some equipment vendors encourage dealers to sell the equipment vendor's service contract with the equipment, rather than service the equipment through their own service organization. Equipment vendor policies in this area fluctuate periodically. Two extremes of policy are IBM, which requires dealers to provide service capability, and Digital, which encourages dealers to sell Digital service.

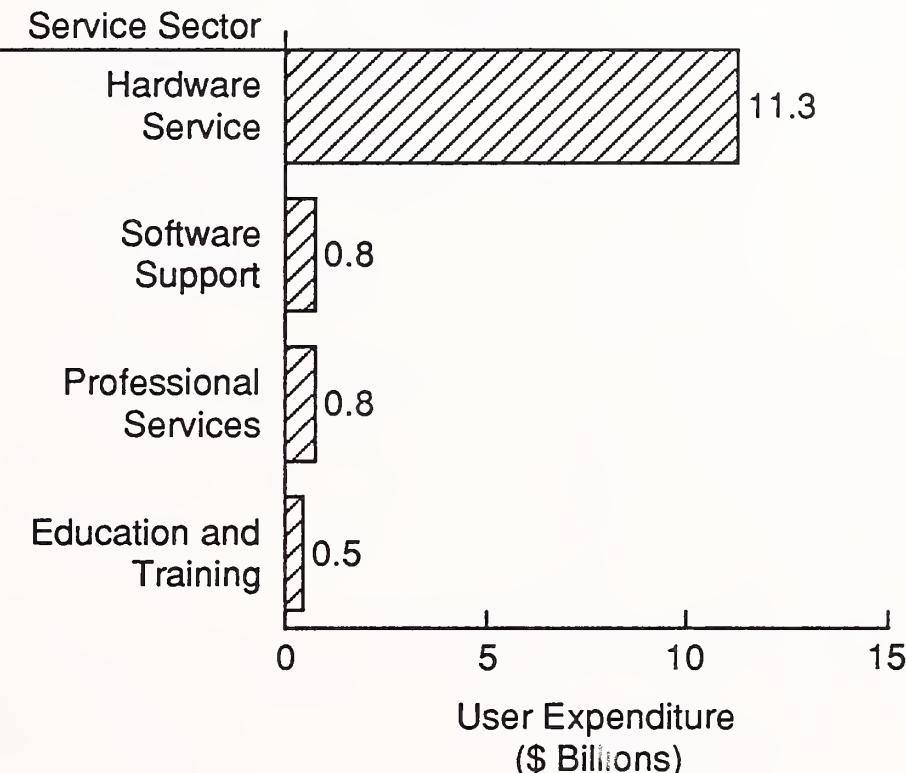
2. 1988 User Expenditure by Service Sector

Exhibit III-5 provides INPUT's estimate for user expenditure for customer services in the four service sectors of the market in 1988:

- Hardware service
- Software support
- Professional services
- Education and training

EXHIBIT III-5

1988 User Expenditure by Service Sector



Note: Rounded numbers

User expenditure for hardware service was the dominant proportion of customer services revenue in 1988, accounting for approximately 84% of user expenditures. The major activity of TPM vendors is the provision of hardware service, and due to this factor it is more appropriate to consider

TPM penetration of the customer services market as penetration of the hardware service sector. TPM penetration of the hardware service sector is estimated at around 8%.

Software support and professional services each accounted for approximately 6% of user expenditure for customer services in 1988.

Education and training is the smallest of the four service sectors of the customer services market, accounting for around 4% of user expenditure in 1988.

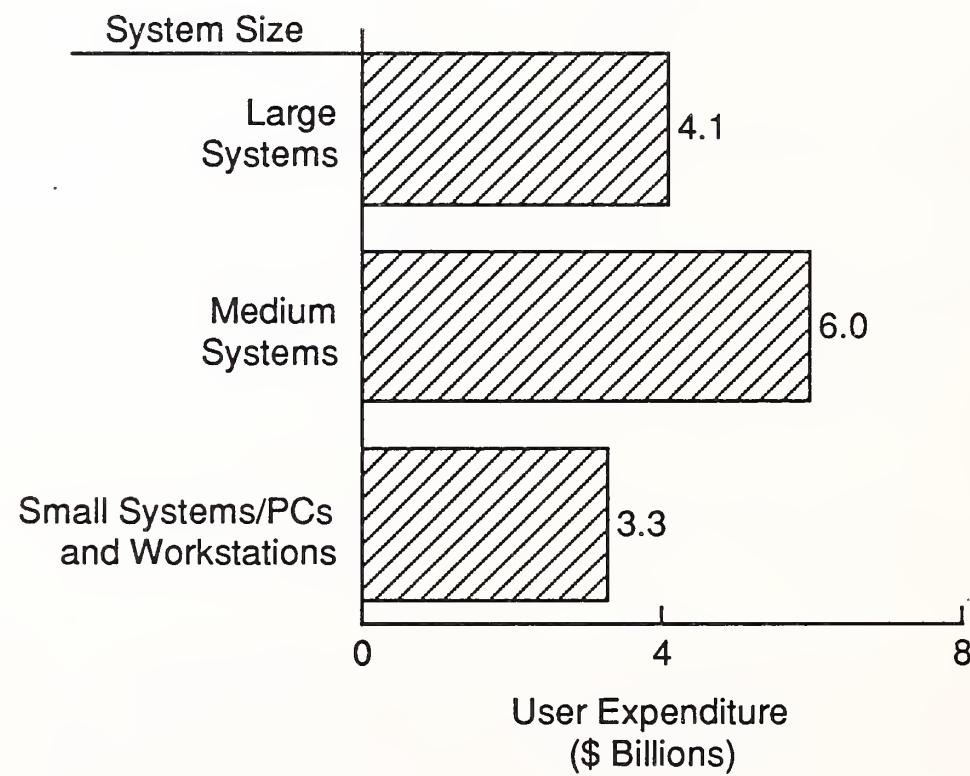
3. 1988 User Expenditure by System Size

Exhibit III-6 provides INPUT's estimate for 1988 user expenditure for customer services in three system size segments of the customer services market:

- Mainframes/Large systems
- Medium range systems
- Small systems/PCs and workstations

EXHIBIT III-6

1988 User Expenditure by System Size



The large systems segment of the customer services market accounted for around 30% of user expenditure for customer services in 1988, representing the second largest system size segment of the customer services market.

The largest system size segment of the customer services market in 1988 was medium range systems, accounting for approximately 45% of user expenditure for customer services. The small systems segment accounted for the remaining 25% of user expenditures for customer services in 1988.

4. 1988 User Expenditure by Country Market

INPUT's estimate for user expenditure for customer services in the Western European individual country markets in 1988 is presented in Exhibit III-7. This exhibit lists customer services revenues in thirteen Western European country markets.

EXHIBIT III-7

1988 User Expenditure by Country Market

	User Expenditure		
	Local Currency (\$ Millions)	\$ Millions	
Austria	Sch	3,310	240
Belgium	BF	13,750	340
Denmark	DK	2,340	310
France	FF	15,130	2,310
Finland	FM	1,170	270
West Germany	DM	5,210	2,700
Italy	Lira	2,430	1,725
Netherlands	Dfl	1,620	745
Norway	NK	1,565	225
Spain	PTA	66,660	550
Sweden	SK	3,385	515
Switzerland	SF	905	530
United Kingdom	£	1,620	2,660
Rest of Europe	-	-	305
Total			13,425

Note: Rounded numbers

The customer services market in West Germany is the largest in Western Europe, accounting for approximately 20% of user expenditure in 1988. The country markets in the United Kingdom, France and Italy are also relatively large compared with other country markets, accounting for around 20%, 17% and 13% respectively, of user expenditures for customer services in Western Europe during 1988.

The four major country markets in Western Europe—West Germany, the United Kingdom, France and Italy—accounted for almost 70% of the total user expenditure for customer services in 1988.

The largest secondary country market among the remaining countries is Spain, which accounts for around 4% of user expenditure for customer services in Western Europe.

C

Market Environment

The key characteristics of the customer services market are listed in Exhibit III-8.

EXHIBIT III-8

Key Market Characteristics

- Hardware maintenance growth slowing
- Software support price bundling
- Opportunities in nonhardware service
- Independent vendor growth higher
- Market domination by equipment vendors

1. Hardware Maintenance Growth Slowing

The growth of the hardware maintenance sector of the customer services market has slowed substantially since the mid-1980s. Until 1986 or 1987, the growth of the hardware maintenance sector was ranging between 10% and 15% compound annual growth rate (CAGR). During the forecast period covered by this report (1989 to 1994), INPUT estimates that the growth of hardware maintenance revenue will slow to a 4% CAGR. Taking into account inflation assumptions (which are included in these figures), the market growth of hardware maintenance, in real terms, has leveled off.

Reasons for this slowdown in growth rate are:

- Improved reliability of hardware, resulting in less requirement for service
- Pricing competition between vendors, particularly between equipment vendors and TPM companies, driving prices for hardware maintenance down
- Extended warranties, removing revenue from the market during the period of warranty
- Implementation of remote diagnostics technology, which not only reduces the cost of service but can also create a user perception that service should cost less

A major issue for customer service vendors is the decline in hardware maintenance revenue growth. Hardware maintenance provides a major source of income for customer services vendors, as evidenced by hardware maintenance accounting for around 84% of user expenditures for customer services in 1988. As a consequence of the declining growth of hardware maintenance revenues, customer services vendors are searching for alternative sources of revenue.

2. Software Support Price Bundling

Equipment vendors have a choice between charging separately for support of the operating system software or bundling this support with some other charge, usually with the software licence fee. In cases where vendors choose to bundle the cost of software support, this has two effects:

- An immediate reduction in the size of the software market in terms of user expenditure for software support
- A consequent reduction in market growth, due to the removal of that vendor's software support revenues from the market

The most significant example of the impact of bundling software support occurred in the first half of 1987, when IBM implemented just such a policy. The effect was to cause a reduction in market size of approximately 20% and a similar impact on market growth during that year. The dominant position of IBM in the computer systems market was responsible for the dramatic impact its policy had on the software support sector of the market.

3. Opportunities in Nonhardware Service

As a consequence of the decline in the growth of hardware maintenance revenues, customer service vendors are searching for new markets from which to supplement their sources of revenue and prevent loss of growth. Opportunities open to vendors are in two major areas:

- Within the existing boundaries of the customer services market—by taking advantage of opportunities in the following higher growth sectors:
 - Software support
 - Professional services
 - Education and training
- Outside the perceived boundaries of the customer services market, in:
 - Applications software support
 - The wider (non-customer services) area of professional services
 - Disaster recovery services
 - Systems operations

The second of these opportunity areas has greater potential for supplementing customer services revenues. The growth of both areas of opportunity are similar, but the market size of the second is much larger and can therefore provide a more appropriate substitute for loss of growth in a dominant revenue stream (hardware maintenance).

4. Independent Service Vendor Growth

The growth of the TPM segment of the customer services market is forecast to be twice the growth of the overall customer services market—16% CAGR compared to 8% CAGR. More importantly, as TPM vendors are primarily active in the hardware maintenance sector, this growth is substantial compared with the 4% growth forecast for that sector.

Equipment vendors are now beginning to regain some of the initiative from the TPM vendors. Equipment vendors are implementing single-source (multivendor) service strategies and are forecast to achieve high growth through these service offerings. The success of equipment vendor single-source service is stimulated by the fact that almost 80% of users state a preference for this type of service, and of these users over 90% would prefer it to be supplied by one of their equipment vendors.

5. Market Domination by Equipment Vendors

A key characteristic of the customer services market is the dominant position of the equipment vendors. Equipment vendors command 84% of the revenues from user expenditures on customer services.

Being dominant in the market does, however, make the equipment vendors' markets a key target for TPM companies. Specific targets of TPM companies are the leading equipment vendors' markets—IBM and Digital.

Being dominant in terms of market share in the customer services market also indicates that the equipment vendors' customer service organizations are more vulnerable to the slowing growth in the hardware maintenance sector. This vulnerability will likely stimulate the search for alternative sources of revenue.

D**Leading Equipment Vendor Customer Services Revenues in 1988**

Exhibit III-9 lists INPUT's estimates of the customer services revenues of the leading fifteen equipment vendors in Western Europe for the calendar year 1988.

This list of leading equipment vendor customer service revenues highlights the dominant position occupied by IBM. Based on INPUT's estimates, IBM's share of the customer services market in 1988 was over 20%. Examining the customer services revenues of the leading five equipment vendors indicates that their combined market share of the customer services market is almost 50%.

The market share of the remaining ten vendors listed in Exhibit III-9 is indicated as being slightly over 32% of the customer services market. Equipment vendors other than those listed in Exhibit III-9, including TPM vendors and dealers and distributors, retain around 18% of the customer services market.

The largest TPM company in Western Europe, Granada Computer Services, with independent maintenance revenues of around \$160 million, would just about match the customer services revenues of the fifteenth largest equipment vendor, Rank Xerox.

Exhibit III-9 also indicates those equipment vendors whose software support pricing is bundled, or mostly bundled with the software license fee. INPUT estimates that bundling of software support pricing by equipment vendors has reduced the potential market for software support by around 35%.

EXHIBIT III-9

Leading Equipment Vendor Customer Service Revenues in 1988

Vendor	Revenue (\$ Millions)				
	Hardware Service	Software Support	Professional Services	Education and Training	Total
IBM	2,650	-(2)	100	100	2,850
Digital	820	210	170	100	1,300
Olivetti	720	53	43	34	850
Bull	750	52	7	6 (1)	815
Siemens	685	48	40	32	805
Unisys	622	57	81	- (1)	760
NCR	550	14 (2)	89	67	720
ICL	415	4 (2)	53	13	485
Hewlett-Packard	363	42	27	23	455
Wang	280	68	52	30	430
Prime	240	72	56	32	400
Philips	322	23	18	7	370
Nixdorf	335	-(2)	1	- (1)	335
Nokia	206	25	7	7	245
Rank Xerox	151	-(3)	2	2	155

Notes: Rounded numbers

(1) Not generally CS revenue

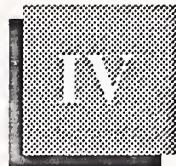
(2) SW support bundled or mostly bundled with software license fee

(3) SW support revenues not separated



Customer Service Market Growth—1989 to 1994

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Customer Service Market Growth— 1989 to 1994

This section of the report provides INPUT's forecast for the growth of customer service revenues from 1989 to 1994 and contains:

- Discussion of the factors that have been taken into account when forecasting growth over the five-year period 1989 to 1994, and an assessment of the impact the factors will have on growth.
- A forecast for the three market segments defined by INPUT, covering the five-year period 1989 to 1994. These segments are:
 - Equipment vendors
 - TPM vendors
 - Dealers and distributors
- A forecast for the four service sectors defined by INPUT, covering the five-year period 1989 to 1994, which are:
 - Hardware service
 - Software support
 - Professional service
 - Education and training
- An assessment of the growth of thirteen individual country markets over the period 1989 to 1994.

A

Market Growth Factors

INPUT's market growth forecast for the customer services market has taken into account a number of factors that can influence growth of the market. These factors are listed in Exhibit IV-1.

EXHIBIT IV-1

Market Growth Factors

- Improved hardware reliability
- Increasing system complexity
- Software support bundling policies
- User single-source service requirements
- Vendor initiatives
- Pricing competition
- User quality needs
- Skill shortages
- Proactive service
- Vendor warranty policies

1. System Reliability

Individual components of the computer system are becoming increasingly more reliable, particularly hardware components. The effect of this improved reliability is to reduce the level and quantity of service required. One example of this is provided by a recent (July 1989) claim made by IBM UK that the AS400 is showing considerable reduction in downtime—75%—compared with the S 38. IBM also claims that hardware maintenance costs are significantly reduced, quoting 4% of hardware costs, compared with the industry average typically perceived by users to be between 10% and 12%, according to INPUT's user research.

The effect of improved hardware reliability is to reduce growth in the hardware service sector of the market.

However, although individual system components are demonstrating improved reliability, the complexity of system configurations and applications is increasing. The effect of these increases in system complexity is to partly offset improvements to the reliability of individual system components. Therefore, users may not fully realize these improvements at the complete system level.

The impact of increased system complexity is to provide a slight increase in growth of revenues, particularly in the hardware service sector of the market.

2. Vendor Software Support Pricing Policies

There is a difference of opinion in the customer services market as to whether software support should be individually priced, or bundled with the software license fee. Vendor and user opinion reflects a degree of uncertainty regarding future trends.

INPUT user research indicates that users are almost equally divided in their preferences for individual or bundled software support pricing, though there is a degree of dependence on industry sectors. For example, some vendors consider that users in the government and public utilities sectors likely prefer all aspects of support and service itemized individually, whereas users within the education sector will more likely prefer bundled pricing due to uncertainty over the level of succeeding years' budgets.

INPUT vendor research indicates that around 50% of vendors are unsure, not knowing whether individual or bundled pricing is the correct approach to adopt. Some vendors acknowledge that bundled pricing may be a future trend, but at the same time admit to being unsure as to why they believe the trend exists.

Future vendor policy over individual or bundled software support pricing has been assumed to be as follows:

- Some vendors will continue to follow the approach of bundling software support with the software license fee. However, some items may be unbundled as chargeable options, as vendors implement strategies to offset the stagnation of hardware maintenance revenues.
- Some vendors will adopt a policy of unbundling software support pricing to stimulate customer services revenues.

Vendor policies with regard to software support pricing could have a significant impact. For example, if IBM decided to fully unbundle software support pricing, this would create an additional estimated 20% increase in user expenditures within the software support segment of the customer services market.

3. Single-Source Service

INPUT user research indicates that approximately 80% of users prefer that all service on a site be provided, or at least managed, by one service vendor. Although this aspect of user requirements does not influence overall market growth, it does influence individual segments of the market.

Of the 80% of users that express a preference for single-source service, 95% would prefer this service to be provided by one of their equipment vendors. This preference provides an opportunity for equipment vendors to recover revenues previously lost to TPM companies, but is limited by their ability to respond.

Equipment vendors' single-source service activities will divert revenue from the TPM segment of the market to the equipment vendors' segment.

TPM companies are well-positioned to provide single-source service, particularly the larger companies such as Granada, Thomainfor, and Sorbus. Prior to the equipment vendors' structuring a substantial single-source service capability, TPM vendors can provide attractive service solutions to users, thus increasing growth in the TPM segment of the customer services market.

4. Vendor Initiatives

Growth rates in the nonhardware maintenance sectors of the market will likely be stimulated by vendor initiatives in search of revenue sources to substitute for stagnation in hardware maintenance revenues.

These initiatives can fall within the following areas:

- Professional services is considered by INPUT to be an area of opportunity for service vendors. Within the context of customer services, vendors will likely structure a range of service offerings to attract incremental additional revenues in such areas as:
 - Consultancy
 - Network management and maintenance
 - Software evaluation
 - Operations management
 - Cabling
 - Environmental services
- Software support represents an opportunity for vendors to take the initiative and adopt a leadership role. Previous comment relating to user opinion being equally divided over individual or bundled pricing, and vendors being confused over user needs, refers to this opportunity. INPUT recommends that vendors take the approach of bundling the pricing and unbundling the functionality of software. Service offerings can be structured to provide a range of chargeable options and a tiered pricing structure based on user requirements. One example of tiered software support is provided by the 1989 Hewlett-Packard Enhanced Software Support program.

- Service packaging is an approach to “total solution” service which is comprised of the more traditional service elements aligned with professional services and education and training. The objective is to satisfy a user’s total service needs. An example of total solution service is provided by Unisys in the USA, where close alignment of professional services and education and training allows for a total solution approach through the VAM/Surety program.

5. Pricing Competition/User Quality Needs

Vendors express concern that competitive forces are adversely impacting prices, particularly the prices of hardware maintenance. 1989 vendor research indicates that 60% of vendors are concerned that quality of service is restricted by price, or that any further pressure on pricing will start to impact quality.

This view by vendors would appear to be at variance with the needs of users. User research indicates that users rate quality of service higher in importance than price, suggesting that users’ primary needs are for quality service. Further, one of the major user issues is quality of service and is expressed as dissatisfaction with service price, a judgement considered by INPUT to reflect concern over “value for money.”

User demand for quality service, and preference for equipment vendor single-source service will likely have a stabilizing effect on prices. Also, vendors have the opportunity to structure premium level service at premium prices.

One recent event (late 1989) could cause additional pressure on pricing. The Central Computer and Telecommunications Agency (CCTA), a government body in the U.K., has produced a policy document recommending that government departments consider single-source maintenance (SSM) and obtain competitive quotations for service contracts. If implemented, these recommendations could lead to increased competition and pressure on prices, and spread to other sectors of the industry and other countries.

6. Skill Shortages

The forecast shortage of skills within Europe, particularly in the software service area, provides growth opportunities for vendors within the education and training sector of the customer services market. Skill shortages already exist in some areas.

Vendors who can capitalize on these opportunities will likely benefit from relatively high growth of education and training revenues.

One recent example of vendor initiative in this area is provided by ICL, which has opened a UNIX training center in Dublin, Ireland. Ireland is a country where a high proportion of college students qualify in the computer sciences or related areas and ICL is attempting to utilize this resource. As a result of this activity ICL is projecting that by 1992 the training center will have raised European UNIX training revenues to £7 million (\$11.5 million).

7. Proactive Service

Vendor implementation of preventive maintenance and implanted diagnostic capability tends to reduce service requirements and hence negatively influence market growth.

These implementations are usually aimed at the larger, higher performance systems. The higher growth markets for computer systems are biased towards the smaller systems, where this technology is being implemented more slowly. However, the introduction of the IBM AS400 in Europe in June 1988 could signal a change of emphasis. The AS400, which spans the small and medium-range systems has a relatively high built-in diagnostic capability, and as previously mentioned, IBM surveys indicate a reduction in system maintenance costs (4% of hardware cost compared with an industry average of 10% to 12%).

8. Vendor Warranty Policies

INPUT considers that vendors' extended warranties will have less impact on customer services market growth than previously anticipated. Reasoning behind this is as follows:

- Three-year warranties are unlikely to extend upwards from the low end of the systems market (i.e., PCs and workstations). In addition, vendors who are selling in less competitive market environments claim to feel less pressure to extend warranties beyond one year, or even 90 days in some instances.
- Extended warranties are considered by some vendors to be short-term marketing tools.
- Three-year warranties tend to be chargeable items for cover in the second and third years, as opposed to being free.
- Outside the PC/workstation segment, vendors consider that warranties will stabilize at 12 months.

The impact of extended warranties is to remove revenue from the market by reducing user expenditure for customer service during the warranty period.

B**Market Segment Growth—1989 to 1994**

All INPUT forecasts are inclusive of inflation.

Exhibit IV-2 presents INPUT's forecast for the customer services market in Western Europe over the five-year period from 1989 to 1994, and separates growth into three market segments:

- Equipment vendors
- TPM vendors
- Dealers and distributors

EXHIBIT IV-2

Market Segment Growth 1989-1994

Market Segment	User Expenditure (\$ Millions)							1989-1994 CAGR (Percent)
	1988	1989	1990	1991	1992	1993	1994	
Equipment Vendors	12,310	13,410	14,410	15,500	16,710	17,800	19,000	7
TPM Vendors	920	1,100	1,300	1,520	1,760	2,010	2,290	16
Dealers and Distributors	195	220	250	280	320	370	410	14
Total	13,425	14,730	15,960	17,300	18,790	20,180	21,700	8
CAGR (Percent)	-	10	9	8	8	7	6	-

Equipment vendors' revenues account for a substantial proportion of user expenditure for customer services, representing around 91% of the estimated total market in 1989. The compound annual growth rate (CAGR) for equipment vendors is forecast at 7% over the five-year period, a rate that is approximately half that of the other two segments of the market. The result of this 7% CAGR is that the equipment vendors' share of the customer services market will fall slightly over the forecast period, to around 87% in 1994.

Over the same period, the TPM vendors' share of the market is estimated to grow at 16% overall. TPM vendor market share is forecast to increase from approximately 8% in 1989 to around 11% by 1994.

In line with an increasing trend for smaller systems to be sold through third-party channels such as dealers and distributors, the proportion of service revenues forecast for these outlets will also increase. This increase involves dealers who are termed "servicing dealers;" not all dealers service the equipment they sell. Over the forecast period 1989 to 1994, the dealer and distributor share of the customer services market is forecast to increase modestly from approximately 1.5% in 1989 to around 2% by 1994.

The overall customer services market in Western Europe is forecast to grow at an 8% CAGR over the period 1989 to 1994, at which time user expenditures are estimated to have exceeded \$20 billion. As these growth forecasts include inflation, the "real" growth rate is in the region of 4% overall for Western Europe.

By the end of the five-year forecast period, growth in the Western European customer services market is forecast to have slowed to around 6%.

C

Service Sector Growth—1989 to 1994

EXHIBIT IV-3

INPUT's forecast for the Western European customer services market by service sector is presented in Exhibit IV-3.

Service Sector Growth 1989-1994

Service Sector	User Expenditure (\$ Millions)							1989-1994 CAGR (Percent)
	1988	1989	1990	1991	1992	1993	1994	
Hardware Service	11,290	12,100	12,700	13,320	13,990	14,500	14,900	4
Software Support	785	970	1,190	1,430	1,680	1,980	2,350	20
Professional Services	840	1,060	1,350	1,680	2,080	2,500	3,050	24
Education & Training	510	600	720	870	1,040	1,200	1,400	18
Total	13,425	14,730	15,960	17,300	18,790	20,180	21,700	8
CAGR (Percent)	-	10	9	8	8	7	6	-

The four service sectors are:

- Hardware service
- Software support
- Professional services
- Education and training

Hardware maintenance is the dominant source of user expenditure, accounting for approximately 82% of the market in 1989, but decreasing to around 70% by 1994. The primary reason for this reduction is the relatively slow growth of 4% in the hardware service sector, and allowing for inflation content of this growth suggests that "real" growth is around zero.

Other sectors of the market are considered to offer good growth opportunities for vendors. For example:

- Software support is forecast to grow at a 20% CAGR over the period 1989 to 1994. Over this period, the proportion of revenue generated by software support will increase from approximately 7% in 1989 to around 11% by 1994.
- Forecast growth for the professional service sector of the customer services market is 24% over the five-year period 1989 to 1994. The proportion of user expenditure on professional services is estimated to increase from approximately 7% in 1989 to around 14% by 1994, when it is estimated to reach \$3 billion.
- Education and training is forecast to grow at 18% over the period 1989 to 1994. Over this period, the proportion of revenue generated by this sector of the customer services market is forecast to increase from approximately 7% in 1989 to around 4% by 1994. Growth in the education and training sector is expected to peak in 1991 at 21%.

In forecasting a CAGR of 20% for the software support sector of the customer services market, INPUT has assumed that IBM will only partially, if at all, unbundle software support pricing. However, if IBM software support pricing should become fully unbundled, growth would increase towards 30% due to IBM's position as market leader.

D

Country Market Growth—1989 to 1994

Exhibit IV-4 shows INPUT's forecasts for growth in individual European country markets over the five-year period 1989 to 1994.

EXHIBIT IV-4

Country Market Growth 1989-1994

Country Market	User Expenditure (\$ Millions)				
	1988	1989	1988-1989 CAGR (Percent)	1994	1989-1994 CAGR (Percent)
Austria	240	260	10	380	8
Belgium	340	370	10	550	8
Denmark	310	330	8	440	6
France	2,310	2,490	18	3,510	7
Finland	270	290	8	390	6
West Germany	2,700	2,860	6	3,800	6
Italy	1,725	2,050	19	3,700	13
Netherlands	745	800	8	1,070	6
Norway	225	240	8	320	6
Spain	550	660	20	1,380	16
Sweden	515	560	10	820	8
Switzerland	530	570	8	760	6
United Kingdom	2,660	2,920	10	4,100	7
Rest of Europe	305	330	10	480	8
Total	13,425	14,730	10	21,700	8

Note: Rounded numbers

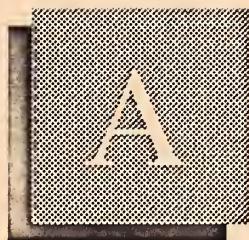
The customer services market is dominated by the four major country markets of:

- France
- West Germany
- Italy
- United Kingdom

These four country markets account for around 70% of user expenditure for customer services in Western Europe.

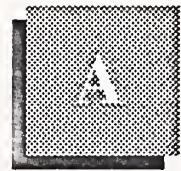
Growth over the period 1989 to 1994 is relatively consistent in eleven of the thirteen country markets analyzed, ranging between 6% and 8%. The more developing markets in Italy and Spain are forecast to grow at higher rates of 13% and 16%, respectively, as vendors penetrate the less developed markets.

In forecasting growth in the individual country markets, INPUT has taken into account the inflation rates for individual countries, and checked projected growth rates for Gross Domestic Product (GDP) to ensure that the growth rates forecasted are realistic.



Appendix: 1988 Country Market Revenue Data

1



Appendix: 1988 Country Market Revenue Data

EXHIBIT A-1

Austria—Customer Services Revenues, 1988 (Sch Millions)

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	98	10	1.0	(c)	109
Digital	190	54	41.0	27.0	312
Hewlett-Packard	98	11	7.0	7.0	123
IBM	734	(a)	27.0	27.0	788
ICL	27	(a)	4.0	1.0	32
NCR	72	1	12.0	9.0	94
Nixdorf	163	(a)	negligible	(c)	163
Nokia	11	1	0.5	0.5	13
Olivetti	103	8	7.0	4.0	122
Philips	245	18	15.0	8.0	286
Prime	65	19	16.0	8.0	108
Rank Xerox	64	(b)	negligible		64
Siemens	254	18	15.0	12.0	299
Unisys	136	14	14.0	(c)	164
Wang	35	8	7.0	4.0	54
Other vendors	299	27	27.0	14.0	367
TPM	150	2	3.0	3.0	158
Dealers and Distributors	50	1	1.0	1.0	53
Total	2,794	192	197.5	125.5	3,309

Notes: (a) SW support bundled with SW license fee
 (b) SW support revenues not separated
 (c) Not C.S. revenue

EXHIBIT A-2

**Belgium—Customer Services Revenues, 1988
(BF Millions)**

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	579	53	16.0	(c)	648
Digital	1,090	284	203.0	122.0	1,699
Hewlett-Packard	292	32	20.0	20.0	364
IBM	2,714	(a)	101.5	101.5	2,917
ICL	142	(a)	8.0	4.0	154
NCR	433	12	69.0	53.0	567
Nixdorf	284	(a)	negligible	(c)	284
Nokia	170	20	6.0	6.0	202
Olivetti	583	41	37.0	28.0	689
Philips	729	53	45.0	24.0	851
Prime	194	57	49.0	24.0	324
Rank Xerox	198	(b)	negligible	negligible	198
Siemens	275	20	16.0	12.0	323
Unisys	1,134	101	142.0	(c)	1,377
Wang	344	85	65.0	32.0	526
Other vendors	1,094	122	81.0	41.0	1,338
TPM	1,025	10	15.0	15.0	1,065
Dealers and Distributors	210	3	3.0	3.0	219
Total	11,490	893	876.5	485.5	13,745

Notes: (a) SW support bundled with SW license fee

(b) SW support revenues not separated

(c) Not C.S. revenue

EXHIBIT A-3

**Denmark—Customer Services Revenues, 1988
(DK Millions)**

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	54	5	1.0	(c)	60
Digital	98	23	23.0	15.0	159
Hewlett-Packard	30	4	2.0	2.0	38
IBM	602	(a)	22.5	22.5	647
ICL	56	(b)	3.0	1.0	60
NCR	81	2	13.0	10.0	106
Nixdorf	30	(1)	negligible	(c)	30
Nokia	133	17	4.0	4.0	158
Olivetti	166	12	10.0	8.0	196
Philips	33	2	2.0	1.0	38
Prime	54	17	12.0	8.0	91
Rank Xerox	37	(b)	negligible	negligible	37
Siemens	102	8	6.0	5.0	121
Unisys	90	8	11.0	(c)	109
Wang	29	7	5.0	4.0	45
Other vendors	248	30	15.0	7.0	300
TPM	113	1	1.0	1.0	116
Dealers and Distributors	23	1	1.0	1.0	26
Total	1,979	137	131.5	89.5	2,337

Notes: (a) SW support bundled with SW license fee

(b) SW support revenues not separated

(c) Not C.S. revenue

EXHIBIT A-4

France—Customer Services Revenues, 1988 (FF Millions)

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	2,659	194	9.0	(c)	2,862
Digital	753	197	157.0	92.0	1,199
Hewlett-Packard	380	45	29.0	24.0	478
IBM	2,974	(a)	111.5	111.5	3,197
ICL	210	2	7.0	1.0	220
NCR	645	13	103.0	77.0	838
Nixdorf	262	(a)	negligible	(c)	262
Nokia	50	6	1.5	1.5	59
Olivetti	471	35	28.0	22.0	556
Philips	207	13	12.0	4.0	236
Prime	236	71	55.0	31.0	393
Rank Xerox	226	(b)	2.0	2.0	228
Siemens	134	9	8.0	7.0	158
Unisys	655	59	105.0	(c)	819
Wang	367	89	68.0	39.0	563
Other vendors	1,297	125	92.0	51.0	1,565
TPM	1,290	10	15.0	15.0	1,330
Dealers and Distributors	160	3	3.0	3.0	169
Total	12,976	871	805.0	480.0	15,132

Notes: (a) SW support bundled with SW license fee

(b) SW support revenues not separated

(c) Not C.S. revenue

EXHIBIT A-5

Finland—Customer Services Revenues, 1988 (FM millions)

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	16	1	negligible	(c)	17
Digital	108	30	22.0	13.0	173
Hewlett-Packard	-	-	-	-	-
IBM	173	(b)	6.5	6.5	186
ICL	13	(a)	3.0	negligible	16
NCR	23	negligible	4.0	3.0	30
Nixdorf	56	(a)	negligible	(c)	56
Nokia	311	39	8.5	8.5	367
Olivetti	33	3	2.0	1.0	39
Philips	19	1	1.0	negligible	21
Prime	10	3	3.0	1.0	17
Rank Xerox	18	(b)	1.0	negligible	19
Siemens	7	1	negligible	negligible	8
Unisys	58	7	7.0	(c)	72
Wang	6	2	1.0	negligible	9
Other vendors	69	9	4.0	4.0	86
TPM	43	negligible	1.0	1.0	45
Dealers and Distributors	9	negligible	negligible	negligible	9
Total	972	96	63.0	39.0	1,170

Notes: (a) SW support bundled with SW license fee

(b) SW support revenues not separated

(c) Not C.S. revenue

EXHIBIT A-6

West Germany—Customer Services Revenues, 1988 (DM millions)

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	98	9	3.0	(c)	110
Digital	253	66	52.0	31.0	402
Hewlett-Packard	118	14	9.0	8.0	149
IBM	1,135	(a)	42.5	42.5	1,220
ICL	19	(a)	2.0	1.0	22
NCR	210	5	34.0	25.0	274
Nixdorf	224	(a)	negligible	(c)	224
Nokia	29	4	2.0	2.0	35
Olivetti	111	8	7.0	5.0	131
Philips	158	11	9.0	3.0	181
Prime	95	28	22.0	12.0	157
Rank Xerox	58	2	0.5	0.5	61
Siemens	1,019	71	59.0	48.0	1,197
Unisys	137	13	9.0	(c)	159
Wang	54	13	10.0	6.0	83
Other vendors	467	42	35.0	19.0	563
TPM	125	1	1.0	1.0	128
Dealers and Distributors	112	1	1.0	1.0	115
Total	4,422	288	297.0	204.0	5,211

Notes: (a) SW support bundled with SW license fee

(b) SW support revenues not separated

(c) Not C.S. revenue

EXHIBIT A-7

Italy—Customer Services Revenues, 1988 (Lira Billions)

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	141	(c)	1	9	151
Digital	116	30	24	14	184
Hewlett-Packard	56	6	4	4	70
IBM	603	(a)	23	22	648
ICL	9	(a)	negligible	negligible	9
NCR	61	2	10	7	80
Nixdorf	20	(a)	negligible	(c)	20
Nokia	5	1	negligible	negligible	6
Olivetti	486	36	30	23	575
Philips	21	2	1	1	25
Prime	31	9	7	4	51
Rank Xerox	7	(b)	negligible	negligible	7
Siemens	38	3	2	2	45
Unisys	71	6	8	(c)	85
Wang	24	6	4	3	37
Other vendors	247	23	17	10	297
TPM	98	1	1	1	101
Dealers and Distributors	40	negligible	negligible	negligible	40
Total	2,074	125	132	100	2,431

Notes: (a) SW support bundled with SW license fee

(b) SW support revenues not separated

(c) Not C.S. revenue

EXHIBIT A-8

Netherlands—Customer Services Revenues, 1988 (Dfl Millions)

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	49	5	1.0	(c)	55
Digital	161	41	33.0	20.0	255
Hewlett-Packard	39	5	3.0	3.0	50
IBM	292	(a)	11.0	11.0	314
ICL	35	(a)	6.0	1.0	42
NCR	60	2	10.0	7.0	79
Nixdorf	35	(a)	negligible	(c)	35
Nokia	17	2	0.5	0.5	20
Olivetti	79	6	5.0	4.0	94
Philips	83	7	5.0	2.0	97
Prime	26	8	6.0	4.0	44
Rank Xerox	19	(b)	0.5	0.5	20
Siemens	15	1	1.0	1.0	18
Unisys	116	11	20.0	(c)	147
Wang	16	4	2.0	2.0	24
Other vendors	120	11	9.0	4.0	144
TPM	165	1	2.0	2.0	170
Dealers and Distributors	13	negligible	negligible	negligible	13
Total	1,340	104	115.0	62.0	1,621

Notes: (a) SW support bundled with SW license fee

(b) SW support revenues not separated

(c) Not C.S. revenue

EXHIBIT A-9

Norway—Customer Services Revenues, 1988 (NK Millions)

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	75	7	2.0	(c)	84
Digital	91	21	21.0	14.0	147
Hewlett-Packard	22	3	1.0	1.0	27
IBM	378	(a)	14.0	14.0	406
ICL	-	-	-	-	-
NCR	75	2	12.0	9.0	98
Nixdorf	70	(a)	negligible	(c)	70
Nokia	35	4	1.0	1.0	41
Olivetti	101	7	6.0	5.0	119
Philips	31	2	1.0	1.0	35
Prime	34	10	8.0	4.0	56
Rank Xerox	32	1	0.5	0.5	34
Siemens	48	4	3.0	2.0	57
Unisys	46	4	7.0	(c)	57
Wang	36	9	7.0	4.0	56
Other vendors	154	15	14.0	7.0	190
TPM	70	1	1.0	1.0	73
Dealers and Distributors	14	negligible	negligible	negligible	14
Total	1,312	90	99.0	63.0	1,564

Notes: (a) SW support bundled with SW license fee

(b) SW support revenues not separated

(c) Not C.S. revenue

EXHIBIT A-10

Spain—Customer Services Revenues, 1988 (PTA Millions)

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	2,710	254	61	(c)	3,025
Digital	2,662	726	605	363	4,356
Hewlett-Packard	3,957	460	290	254	4,961
IBM	12,947	(a)	484	484	13,915
ICL	363	(a)	36	12	411
NCR	5,542	145	895	678	7,260
Nixdorf	1,573	(a)	negligible	(c)	1,573
Nokia	1,633	194	55	54	1,936
Olivetti	3,485	254	206	169	4,114
Philips	1,815	133	121	48	2,117
Prime	1,161	351	266	157	1,935
Rank Xerox	847	(b)	24	24	895
Siemens	2,468	169	145	121	2,903
Unisys	4,477	424	303	(c)	5,204
Wang	714	169	133	73	1,089
Other vendors	5,325	485	363	242	6,415
TPM	3,750	19	38	38	3,845
Dealers and Distributors	690	6	7	7	710
Total	56,119	3,789	4,032	2,724	66,664

Notes: (a) SW support bundled with SW license fee

(b) SW support revenues not separated

(c) Not C.S. revenue

EXHIBIT A-11

**Sweden—Customer Services Revenues, 1988
(SK Millions)**

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	94	9	3.0	(c)	106
Digital	269	67	59.0	33.0	428
Hewlett-Packard	47	5	3.0	3.0	58
IBM	700	(a)	26.0	26.0	752
ICL	72	(a)	1.0	2.0	75
NCR	141	3	23.0	16.0	183
Nixdorf	59	(a)	negligible	(c)	59
Nokia	288	35	9.0	9.0	341
Olivetti	94	7	6.0	5.0	112
Philips	85	7	5.0	2.0	99
Prime	47	14	10.0	7.0	78
Rank Xerox	46	(b)	0.5	0.5	47
Siemens	45	3	3.0	2.0	53
Unisys	174	16	20.0	(c)	210
Wang	73	17	14.0	8.0	112
Other vendors	288	26	20.0	13.0	347
TPM	225	1	2.0	2.0	230
Dealers and Distributors	90	1	1.0	1.0	93
Total	2,837	211	206.0	129.0	3,383

Notes: (a) SW support bundled with SW license fee

(b) SW support revenues not separated

(c) Not C.S. revenue

EXHIBIT A-12

Switzerland—Customer Services Revenues, 1988 (SF Millions)

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	24	2	1.0	(c)	27
Digital	126	32	26.0	15.0	199
Hewlett-Packard	19	2	2.0	1.0	24
IBM	92	1	3.5	3.5	99
ICL	10	1	1.0	negligible	11
NCR	102	2	17.0	13	134
Nixdorf	37	(a)	negligible	(c)	37
Nokia	10	1	0.5	0.5	12
Olivetti	49	4	3.0	2.0	58
Philips	20	2	1.0	1.0	24
Prime	8	2	2.0	1.0	13
Rank Xerox	6	(b)	negligible	negligible	6
Siemens	31	2	2.0	1.0	36
Unisys	104	9	16.0	(c)	129
Wang	4	1	1.0	1.0	7
Other vendors	37	4	3.0	2.0	46
TPM	31	negligible	1.0	1.0	33
Dealers and Distributors	9	negligible	negligible	negligible	9
Total	719	63	80.0	42.0	904

Notes: (a) SW support bundled with SW license fee

(b) SW support revenues not separated

(c) Not C.S. revenue

EXHIBIT A-13

United Kingdom—Customer Services Revenues, 1988 (£ Millions)

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	45	4	negligible	(c)	49
Digital	100	26	21	12	159
Hewlett-Packard	66	8	5	4	83
IBM	261	(a)	10	10	281
ICL	192	2	28	6	228
NCR	56	1	9	7	73
Nixdorf	19	(a)	1	(c)	20
Nokia	5	1	negligible	negligible	6
Olivetti	35	3	2	2	42
Philips	19	1	1	1	22
Prime	44	13	10	6	73
Rank Xerox	18	(b)	1	negligible	19
Siemens	4	1	negligible	negligible	5
Unisys	74	7	12	(c)	93
Wang	78	19	14	8	119
Other vendors	109	10	8	5	132
TPM	195	1	2	2	200
Dealers and Distributors	17	negligible	negligible	negligible	17
Total	1,337	97	124	63	1,621

Notes: (a) SW support bundled with SW license fee

(b) SW support revenues not separated

(c) Not C.S. revenue

EXHIBIT A-14

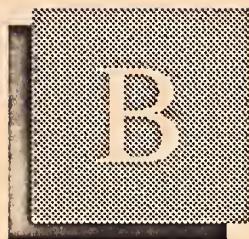
Rest of Europe—Customer Services Revenues, 1988 (\$ Millions)

Vendor	Hardware Service	Software Support	Professional Services	Education and Training	Total
Bull	3.6	0.3	0.1	(a)	4.0
Digital	26.0	6.0	5.0	2.0	39.0
Hewlett-Packard	4.1	0.4	0.3	0.2	5.0
IBM	54.0	(a)	2.0	2.0	58.0
ICL	2.0	(a)	0.5	0.5	3.0
NCR	9.4	1.3	1.8	1.5	14.0
Nixdorf	26.0	(a)	negligible	(c)	26.0
Nokia	1.6	0.2	0.1	0.1	2.0
Olivetti	13.4	1.0	0.3	0.3	15.0
Philips	34.6	2.5	1.4	0.5	39.0
Prime	4.8	1.4	1.2	0.6	8.0
Rank Xerox	2.4	(b)	negligible	negligible	2.4
Siemens	3.2	0.3	0.3	0.2	4.0
Unisys	31.5	3.0	3.5	(c)	38.0
Wang	3.7	0.9	0.8	0.6	6.0
Other vendors	22.0	2.0	2.0	1.0	27.0
TPM	12.0	negligible	negligible	negligible	12.0
Dealers and Distributors	2.0	negligible	negligible	negligible	2.0
Total	256.3	19.3	19.3	9.5	304.4

Notes: (a) SW support bundled with SW license fee

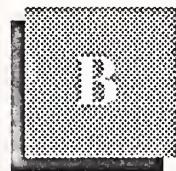
(b) SW support revenues not separated

(c) Not C.S. revenue



Appendix: 1988 Equipment Vendor Revenue Data

1



Appendix: 1988 Equipment Vendor Revenue Data

EXHIBIT B-1

**Bull—Customer Services Revenues, 1988
(\$ Millions)**

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	7.2	0.7	0.1	*	8
Belgium	14.3	1.3	0.4	*	16
Denmark	7.2	0.7	0.1	*	8
France	406.0	29.6	1.4	*	437
Finland	3.6	0.3	0.1	*	4
West Germany	51.0	4.7	1.3	*	57
Italy	100.0	*	1.0	6	107
Netherlands	22.4	2.1	0.5	*	25
Norway	10.7	1.0	0.3	*	12
Spain	22.4	2.1	0.5	*	25
Sweden	14.3	1.3	0.4	*	16
Switzerland	14.3	1.3	0.4	*	16
United Kingdom	73.0	6.6	0.4	*	80
Rest of Europe	3.6	0.3	0.1	*	4
Total	750.0	52.0	7.0	6	815

* Not included in CS

EXHIBIT B-2

Digital—Customer Services Revenues, 1988
(\$ Millions)

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	14	4	3	2	23
Belgium	27	7	5	3	41
Denmark	13	3	3	2	21
France	115	30	24	14	182
Finland	25	7	5	3	40
West Germany	131	34	27	16	208
Italy	82	21	17	10	130
Netherlands	74	19	15	9	117
Norway	13	3	3	2	21
Spain	22	6	5	3	36
Sweden	41	10	9	5	65
Switzerland	74	19	15	9	117
United Kingdom	164	42	34	20	260
Rest of Europe	26	6	5	2	39
Total	820	210	170	100	1,300

EXHIBIT B-3

**Hewlett-Packard—Customer Services Revenues, 1988
(\$ Millions)**

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	7.2	0.8	0.5	0.5	9
Belgium	7.2	0.8	0.5	0.5	9
Denmark	4.0	0.5	0.3	0.2	5
France	58.0	6.8	4.5	3.7	73
Finland	-	-	-	-	-
West Germany	61.0	7.3	4.7	4.0	77
Italy	40.0	4.5	3.0	2.5	50
Netherlands	18.2	2.2	1.4	1.2	23
Norway	3.2	0.4	0.2	0.2	4
Spain	32.7	3.8	2.4	2.1	41
Sweden	7.2	0.8	0.5	0.5	9
Switzerland	11.2	1.3	0.8	0.7	14
United Kingdom	109.0	12.4	7.9	6.7	136
Rest of Europe	4.1	0.4	0.3	0.2	5
Total	363.0	42.0	27.0	23.0	455

EXHIBIT B-4

IBM—Customer Services Revenues, 1988
(*\$ Millions*)

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	54	*	2.0	2.0	58
Belgium	67	*	2.5	2.5	72
Denmark	80	*	3.0	3.0	86
France	454	*	17.0	17.0	488
Finland	40	*	1.5	1.5	43
West Germany	588	*	22.0	22.0	632
Italy	428	*	16.0	16.0	460
Netherlands	134	*	5.0	5.0	144
Norway	54	*	2.0	2.0	58
Spain	107	*	4.0	4.0	115
Sweden	107	*	4.0	4.0	115
Switzerland	54	*	2.0	2.0	58
United Kingdom	428	*	16.0	16.0	460
Rest of Europe	54	*	2.0	2.0	58
Total	2,649	*	99.0	99.0	2,847

* Software support charges are bundled with software license fee

EXHIBIT B-5

**ICL—Customer Services Revenues, 1988
(\$ Millions)**

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	2.0	*	0.3	0.1	2.4
Belgium	3.5	*	0.2	0.1	3.8
Denmark	7.5	*	0.4	0.1	8.0
France	32.0	0.3	1.0	0.2	33.5
Finland	3.0	*	0.6	0.1	3.7
West Germany	10.0	*	0.8	0.3	11.1
Italy	6.0	*	0.2	0.2	6.4
Netherlands	16.0	0.1	2.8	0.6	19.5
Norway	-	-	-	-	-
Spain	3.0	*	0.3	0.1	3.4
Sweden	11.0	0.1	0.2	0.2	11.5
Switzerland	6.0	*	0.6	0.1	6.7
United Kingdom	315.0	3.5	45	10.5	374.0
Rest of Europe	2.0	*	0.6	0.4	3.0
Total	417.0	4.0	53.0	13.0	487.0

* Software support charges are mostly bundled with software license fee

EXHIBIT B-6

NCR—Customer Services Revenues, 1988
(\$ Millions)

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	5.3	0.1	0.9	0.7	7
Belgium	10.7	0.3	1.7	1.3	14
Denmark	10.7	0.3	1.7	1.3	14
France	98.5	2.0	15.8	11.7	128
Finland	5.3	0.1	0.9	0.7	7
West Germany	109.0	2.6	17.4	13.0	142
Italy	43.5	1.1	7.0	5.4	57
Netherlands	27.6	0.7	4.4	3.3	36
Norway	10.7	0.3	1.7	1.3	14
Spain	45.8	1.2	7.4	5.6	60
Sweden	21.5	0.5	3.5	2.5	28
Switzerland	60.0	1.5	10.0	7.5	79
United Kingdom	92.0	2.0	14.8	11.2	120
Rest of Europe	9.4	1.3	1.8	1.5	14
Total	550.0	14	89	67	720

EXHIBIT B-7

Nixdorf—Customer Services Revenues, 1988 (\$ Millions)

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	12	(a)	negligible	(b)	12
Belgium	7	(a)	negligible	(b)	7
Denmark	4	(a)	negligible	(b)	4
France	40	(a)	negligible	(b)	40
Finland	13	(a)	negligible	(b)	13
West Germany	116	(a)	negligible	(b)	116
Italy	14	(a)	negligible	(b)	14
Netherlands	16	(a)	negligible	(b)	16
Norway	10	(a)	negligible	(b)	10
Spain	13	(a)	negligible	(b)	13
Sweden	9	(a)	negligible	(b)	9
Switzerland	22	(a)	negligible	(b)	22
United Kingdom	32	(a)	1	(b)	33
Rest of Europe	26	(a)	negligible	(b)	26
Total	334	(a)	1	(b)	335

Notes: (a) Software support bundled with software license fee

(b) Not CS revenue

Excludes PABX service revenues

EXHIBIT B-8

Nokia—Customer Services Revenues, 1988
(\$ Millions)

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	0.8	0.1	0.1	0.1	1
Belgium	4.2	0.5	0.1	0.2	5
Denmark	17.7	2.2	0.6	0.5	21
France	7.6	0.9	0.3	0.2	9
Finland	72.0	9.0	2.0	2.0	85
West Germany	15.0	1.8	0.6	0.6	18
Italy	3.4	0.4	0.1	0.1	4
Netherlands	7.6	0.9	0.2	0.3	9
Norway	5.0	0.5	0.2	0.1	6
Spain	13.5	1.6	0.5	0.4	16
Sweden	44.0	5.3	1.3	1.4	52
Switzerland	6.0	0.7	0.1	0.2	7
United Kingdom	7.6	0.9	0.3	0.2	9
Rest of Europe	1.6	0.2	0.1	0.1	2
Total	206.0	25.0	6.5	6.5	244

EXHIBIT B-9

Olivetti—Customer Services Revenues, 1988
($\$$ Millions)

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	7.6	0.6	0.5	0.3	9
Belgium	14.4	1.0	0.9	0.7	17
Denmark	22.0	1.6	1.3	1.1	26
France	72.0	5.3	4.3	3.4	85
Finland	7.6	0.6	0.5	0.3	9
West Germany	57.6	4.3	3.4	2.7	68
Italy	345.0	25.4	21.0	16.6	408
Netherlands	36.4	2.7	2.2	1.7	43
Norway	14.4	1.0	0.9	0.7	17
Spain	28.8	2.1	1.7	1.4	34
Sweden	14.4	1.0	0.9	0.7	17
Switzerland	28.8	2.1	1.7	1.4	34
United Kingdom	57.6	4.3	3.4	2.7	68
Rest of Europe	13.4	1.0	0.3	0.3	15
Total	720.0	53.0	43.0	34.0	850

EXHIBIT B-10

Philips—Customer Services Revenues, 1988
(\$ Millions)

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	18.0	1.3	1.1	0.6	21.0
Belgium	18.0	1.3	1.1	0.6	21.0
Denmark	4.4	0.3	0.2	0.1	5.0
France	31.6	2.0	1.8	0.6	36.0
Finland	4.4	0.3	0.2	0.1	5.0
West Germany	82.0	5.8	4.6	1.6	94.0
Italy	15.0	1.1	1.0	0.4	17.5
Netherlands	38.0	3.0	2.2	0.8	44.0
Norway	4.4	0.3	0.2	0.1	5.0
Spain	15.0	1.1	1.0	0.4	17.5
Sweden	13.0	1.0	0.7	0.3	15.0
Switzerland	12.0	1.0	0.7	0.3	14.0
United Kingdom	31.6	2.0	1.8	0.6	36.0
Rest of Europe	34.6	2.5	1.4	0.5	39.0
Total	322.0	23.0	18.0	7.0	370.0

EXHIBIT B-11

Prime—Customer Services Revenues, 1988
(\$ Millions)

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	4.8	1.4	1.2	0.6	8
Belgium	4.8	1.4	1.2	0.6	8
Denmark	7.2	2.2	1.6	1.0	12
France	36.0	10.8	8.4	4.8	60
Finland	2.4	0.7	0.6	0.3	4
West Germany	48.0	14.4	11.2	6.4	80
Italy	21.6	6.5	5.0	2.9	36
Netherlands	12.0	3.6	2.8	1.6	20
Norway	4.8	1.4	1.2	0.6	8
Spain	9.6	2.9	2.2	1.3	16
Sweden	7.2	2.2	1.6	1.0	12
Switzerland	4.8	1.4	1.2	0.6	8
United Kingdom	72.0	21.6	16.8	9.6	120
Rest of Europe	4.8	1.5	1.0	0.7	8
Total	240.0	72.0	56.0	32.0	400

EXHIBIT B-12

**Rank Xerox—Customer Services Revenues, 1988
(\$ Millions)**

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	4.7	*	negligible	negligible	4.7
Belgium	4.9	*	negligible	negligible	4.9
Denmark	4.9	*	negligible	negligible	4.9
France	34.5	*	0.2	0.1	34.8
Finland	4.2	*	0.1	0.1	4.4
West Germany	29.8	0.8	0.2	0.2	31.0
Italy	5.0	*	0.1	0.1	5.2
Netherlands	8.6	*	0.1	0.2	8.9
Norway	4.5	0.2	0.1	0.1	4.9
Spain	7.0	*	0.2	0.2	7.4
Sweden	7.0	*	0.1	0.1	7.2
Switzerland	3.5	*	negligible	0.1	3.6
United Kingdom	30.0	*	0.4	0.3	30.7
Rest of Europe	2.4	*	negligible	negligible	2.4
Total	151.0	1.0	1.5	1.5	155.0

* Software support revenues not separated

EXHIBIT B-13

Siemens—Customer Services Revenues, 1988
(\$ Millions)

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	18.7	1.3	1.1	0.9	22
Belgium	6.8	0.5	0.4	0.3	8
Denmark	13.6	1.0	0.8	0.6	16
France	20.4	1.4	1.2	1.0	24
Finland	1.7	0.1	0.1	0.1	2
West Germany	528.0	36.8	30.6	24.6	620
Italy	27.0	1.9	1.7	1.4	32
Netherlands	6.8	0.5	0.4	0.3	8
Norway	6.8	0.5	0.4	0.3	8
Spain	20.4	1.4	1.2	1.0	24
Sweden	6.8	0.5	0.4	0.3	8
Switzerland	18.0	1.3	1.0	0.7	21
United Kingdom	6.8	0.5	0.4	0.3	8
Rest of Europe	3.2	0.3	0.3	0.2	4
Total	685.0	48.0	40.0	32.0	805

EXHIBIT B-14

Unisys—Customer Services Revenues, 1988
(\$ Millions)

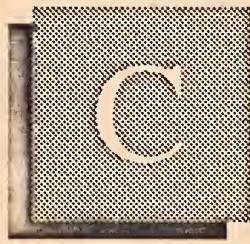
Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	10.0	1.0	1.0	*	12.0
Belgium	28.0	2.5	3.5	*	34.0
Denmark	12.0	1.0	1.5	*	14.5
France	100.0	9.0	16.0	*	125.0
Finland	13.5	1.5	1.5	*	16.5
West Germany	71.0	6.5	4.5	*	82.0
Italy	50.0	4.5	5.5	*	60.0
Netherlands	53.0	5.0	9.0	*	67.0
Norway	6.5	0.5	1.0	*	8.0
Spain	37.0	3.5	2.5	*	43.0
Sweden	26.5	2.5	3.0	*	32.0
Switzerland	61.0	5.5	9.5	*	76.0
United Kingdom	122.0	11.0	19.0	*	152.0
Rest of Europe	31.5	3.0	3.5	*	38.0
Total	622.0	57.0	81.0	*	760.0

* Not customer services

EXHIBIT B-15

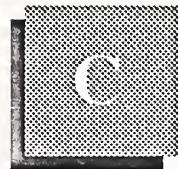
Wang—Customer Services Revenues, 1988
(\$ Millions)

Country	Hardware Service	Software Support	Professional Services	Education and Training	Total
Austria	2.6	0.6	0.5	0.3	4
Belgium	8.5	2.1	1.6	0.8	13
Denmark	3.9	0.9	0.7	0.5	6
France	56.0	13.6	10.4	6.0	86
Finland	1.3	0.4	0.2	0.1	2
West Germany	28.0	6.8	5.2	3.0	43
Italy	17.0	4.1	3.1	1.8	26
Netherlands	7.2	1.7	1.3	0.8	11
Norway	5.2	1.3	1.0	0.5	8
Spain	5.9	1.4	1.1	0.6	9
Sweden	11.1	2.6	2.1	1.2	17
Switzerland	2.6	0.6	0.5	0.3	4
United Kingdom	127.0	31.0	23.5	13.5	195
Rest of Europe	3.7	0.9	0.8	0.6	6
Total	280.0	68.0	52.0	30.0	430



Appendix: Market Forecast Reconciliation

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Appendix: Market Forecast Reconciliation

A reconciliation of INPUT's forecast of the 1988 customer service market and 1989 estimates of the 1988 customer service market is provided in Exhibits C-1 and C-2. Exhibit C-1 gives the reconciliation by service sector and Exhibit C-2 by country market.

Comments relating to this reconciliation can be summarized as follows:

- Additional research during 1989 has enabled INPUT to more accurately determine the size of the customer services market. Consequently, estimates relating to market size have been revised to reflect the impact of new data collected.
- In line with previous forecasts, INPUT projects a continuing decline in user expenditure for hardware maintenance. Forecast growth figures for the hardware maintenance sector reflects this decline.
- Overall, inflation rates in Western Europe indicate an increase between 1988 and 1989. INPUT considers that this increase in inflation rates is a short-term effect and has therefore taken a conservative view by not increasing growth rate forecasts above the levels forecast in 1988.

Each year, INPUT examines the forecasts it provided in previous years in the light of new data obtained from:

- Current year research
- Information received from vendors
- Reassessment of market drivers and inhibitors and long-term industry trends

EXHIBIT C-1

**Customer Service Market Forecast
Reconciliation—Service Sectors
(\$ Millions)**

Service Sector	1988 Forecast of 1988 Market	1989 Estimate of 1988 Market	CAGR Forecast in 1988 Report, 1988-1993 (Percent)	CAGR Forecast in 1989 Report, 1989-1994 (Percent)
Hardware Service	8,890	11,290	5	4
Software Support	1,020	785	20	20
Professional Services	535	840	24	24
Education and Training	185	510	18	18
Total	10,630	13,425	8	8

EXHIBIT C-2

Customer Service Market Forecast Reconciliation
Country Markets
(\$ Millions)

Country	1988 Forecast of 1988 Market	1989 Estimate of 1988 Market	CAGR Forecast in 1988 Report, 1988-1993 (Percent)	CAGR Forecast in 1989 Report, 1989-1994 (Percent)
Austria	235	240	Not Forecast	8
Belgium	320	340	Not Forecast	8
Denmark	250	310	Not Forecast	6
France	2,060	2,310	8	7
Finland	170	270	Not Forecast	6
West Germany	2,415	2,700	4	6
Italy	1,180	1,725	15	13
Netherlands	525	745	6	6
Norway	200	225	Not Forecast	6
Spain	410	550	16	16
Sweden	385	515	Not Forecast	8
Switzerland	440	530	6	6
United Kingdom	1,800	2,660	8	7

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To ensure that the highest standards of report quality are maintained, INPUT would appreciate your assessment of this report. Please take a moment to provide your evaluation of the usefulness and quality of this study. When complete, simply fold, staple, and drop in the post.

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